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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,577

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Michio Miura

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8600

4372

7590

02/22/2005

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,577

Applicant(s)

MIURA ET AL.

Examiner

Barbara Summons

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/1/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: attachement 1

EXPARTE QUAYLE ACTION

I. This application is in condition for allowance except for the following formal matters:

A. In the Drawings:

1. Figure 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see e.g. page 5, lines 33-34). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

B. In the Specification:

2. The abstract of the disclosure is objected to because on line 6 thereof, "tantallite" should be changed to - - tantalate - - because LiTaO_3 is lithium tantalate (see the specification page 1, lines 19-20), and not lithium "tantallite" per se, which includes niobium (Nb) and usually other minerals such as iron and manganese (Fe, Mn), as can be found in the Webster's II New Riverside University Dictionary attachment. Even if "tantallite" is also proper, due to the use of electronic word searching, it is important that the prevalent terminology of lithium tantalate be used so that this document will be found in future searches. Correction is required. See MPEP § 608.01(b).

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3. The abstract of the disclosure is objected to because on the next to last line thereof "filter" should be changed to - - wave - - because a "filter" is not "propagated" but a surface acoustic wave is (see also the specification page 10, line 26 and page 11, lines 25-26 and 30 which are correct). Additionally, each resonator of a filter, for example the series resonators and parallel resonators of a ladder filter, will generally propagate surface acoustic waves having different wavelengths to be resonant at different frequencies, thereby resulting in the filter's band pass characteristics. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: On each of page 1, line 20; page 4, line 14 and line 31; and page 7, line 3 and line 15; note that "tantallite" should be changed to - - tantalate - - for the same reasons discussed in paragraph 2 above. Additionally, on each of page 4, line 21 and page 5, line 1, note that "filter" should be changed to - - wave - - for the same reasons discussed in paragraph 3 above. Appropriate correction is required.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: - - Surface Acoustic Wave Device With Lithium Tantalate On A Sapphire Substrate And Filter Using The Same - -.

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C. In the Claims:

In claim 1, on line 8 thereof, "tantalite" should be changed to - - tantalate - -.

In claim 1, on line 15 thereof, "filter" should be changed to - - wave - -.

In claim 4, on line 9 thereof, "tantalite" should be changed to - - tantalate - -.

In claim 4, on line 16 thereof, "filter" should be changed to - - wave - -.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Allowable Subject Matter

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or fairly suggest a surface acoustic wave device or filter having each of the specifically recited features, and especially using a lithium tantalate on sapphire substrate with parameters meeting both claimed equations (1) and (2). The closest prior art references are discussed below.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 51-77154 discloses a SAW device using lithium tantalate on white sapphire (see the abstract), and while it appears it may meet the limitation of equation (1) [see the paragraph bridging columns 3 and 4], it does not appear to meet the limitation of equation (2).

The Shibata article discloses a surface acoustic wave (SAW) device using lithium tantalate on a sapphire substrate, but $h/\text{wavelength}$ (i.e. thickness of the piezoelectric layer/wavelength of the SAW) is not greater than 10 as required by equation (2) [see Fig. 7].

Shibata et al. U.S. 6,259,186 shows a SAW device also using lithium tantalate on sapphire (see col. 2, lines 49-54 and 61-67) but not meeting equation (2) [see also e.g. Figs. 1, 5 and 7-12].

Shibata et al. JP 6-56592 discloses a SAW device having a lithium tantalate film formed by laser abrasion (see the abstract) on a sapphire substrate.

Heiko et al. JP 2001-285019 discloses a SAW device having lithium tantalate epitaxially grown on sapphire, but the lithium tantalate is a buffer layer for a piezoelectric layer of KNbO_3 .

Kub et al. U.S. 6,767,749 discloses a SAW device using a lithium tantalate on sapphire substrate (see col. 8, lines 33-37).

Wright U.S. 6,445,265 discloses a SAW device using a lithium tantalate on sapphire substrate (see col. 1, lines 63-65) but the thickness of the piezoelectric is limited to one acoustic wavelength (see col. 3, lines 28-31).

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Yamanouchi et al. U.S. 6,198,197 discloses a SAW device using a lithium tantalate on sapphire substrate (see col. 4, lines 45-49).

Bennett U.S. 4,006,438 discloses a SAW device using a lithium tantalate on sapphire substrate (see col. 7, lines 45-48 and 54-58).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
February 16, 2005
(1 attachment)



**BARBARA SUMMONS
PRIMARY EXAMINER**